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Swiss trainee teachers know more about transgender issues but think more positively about intersex people

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Abstract

Transgender and intersex people experience significant social discrimination related to psychological distress. Creating safe school environments and improving attitudes towards trans and intersex people through education are therefore essential. This study investigated Swiss trainee teachers' (1) knowledge, (2) affective, behavioural, and cognitive attitudes, and (3) predictors of their attitudes towards trans and intersex people. Participants ($N = 316$) were randomly assigned to complete equivalent items about either trans or intersex issues. Several measures showed that the trainee teachers knew more about trans than intersex issues. Overall, their attitudes were positive towards both groups, but cognitive attitudes were significantly more positive towards intersex people. Hierarchical regression analyses found that lower endorsement of sex and gender binary beliefs most strongly predicted positive attitudes towards both trans and intersex people, underscoring the need for educational interventions that target these binary beliefs. We discuss the implications of these findings for inclusive schooling, taking into account the needs of sex and gender diverse young people.

Keywords Transgender · Intersex · Attitudes · Knowledge · Binary beliefs · Education · Trainee teachers

Social discrimination against transgender (trans) people and people with intersex variations (intersex people) represents a serious problem in society (Mestre, 2022; Pöge et al., 2020). Both groups are at high risk of experiencing stigmatisation, hate

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speech, and physical violence (Drabish & Theeke, 2022; Hart & Shakespeare-Finch, 2022). It is well established in the literature on gender minority stress that these stressors lead to psychological distress such as anxiety, depression, and suicidality among both trans (Jäggi et al., 2018; Jones et al., 2024; Stein et al., 2023) and intersex (Jones et al., 2016; Rosenwohl-Mack et al., 2020) people. It is also well documented that schools in particular can be hostile environments for trans (Horton, 2023) and intersex (Brömdal et al., 2021; Ghattas, 2015) people. In schools, stereotypical and binary conceptions of sex and gender continue to be (re)produced (Enzendorfer & Haller, 2020). Teachers are unaware of trans and intersex young people's concerns and may trivialise or fail to respond to harassment and heteronormative violence against their students (Bartholomaeus & Riggs, 2017; Haase et al., 2025; Kampshoff et al., 2023). Trans (Horton, 2023) and intersex (Henningham & Jones, 2021) young people often feel unsupported and invisible while experiencing ignorance and exclusion in school spaces with detrimental effects on their mental health (Kassen, 2022; Marraccini et al., 2022).

However, less hostile school environments can be fostered by increasing the presence of supportive educators (Kosciw et al., 2013), gender education training (Gorrotxategi et al., 2020), and critical reflection on gender norms (Klocke, 2016). Topics related to sex and gender diversity are addressed in schools specifically within sex education. Guidelines for evidence-based and contemporary sex education at the international level (WHO, 2018), suggest addressing gender norms, roles, stereotypes, and identities as key topics. In Switzerland, where this study was conducted, these issues are already part of the compulsory school curriculum (Kappler & Schär, 2019). The Swiss curriculum specifically states that discrimination on the basis of gender should form the basis of critical reflection, and that pupils should learn to deal with gender diversity issues respectfully. However, it does not explicitly refer to trans and intersex issues (Deutschschweizer Erziehungsdirektoren-Konferenz (D-EDK), 2016). Accordingly, the school climate for trans and intersex students likely depends on individual teachers' awareness of these topics, their attitudes and beliefs about trans and intersex groups, and their willingness to address relevant issues in the classroom. This is the first study to explicitly compare teachers' knowledge of, and attitudes towards trans and intersex people and issues, both in Switzerland and in any other national context.

1 Awareness of gender identity and misconceptions about intersex variations

To ensure clarity, we first define the terms we use to refer to the groups of people who are the focus of this study. Describing one's individual and internal self-concept of gender is known as gender identity. 'Gender' includes, for example, being cisgender, transgender, or nonbinary (Veldhuis et al., 2024). Trans people do not, or only partially, identify with the gender assigned to them at birth. They have different ways of identifying with their gender and consider themselves to be female, male, or nonbinary (Debus & Laumann, 2019). Intersex is an umbrella term for a range of congenital variations in genetic and/or anatomical and/or hormonal sexual character-

istics that lie beyond the medical standards of male and female embodiment (Ghattas et al., 2015). In medicine, this broad group of intersex variations is often known by the acronym DSD (disorder or differences of sex development or diverse sex development) (Krege et al., 2019) while 'variations in sex characteristics' (VSC) is used emancipatory from a human rights perspective (Ghattas et al., 2015). People born with intersex variations may identify in diverse ways. Estimates vary regarding the proportion of intersex people who are cisgender, trans, or nonbinary. For instance, a large Australian study found that about 25% identified outside the gender binary, while other studies report lower figures (Jones et al., 2016). In contrast to intersex, endosex refers to people whose sex characteristics align with medical norms for male or female bodies, while endosexism describes discrimination based on the belief that sex is strictly binary (Carpenter et al., 2023). People generally associate transgender with gender identity (Anderson, 2023; Reiman et al., 2023). In contrast, surveys in the USA and UK show that intersex is familiar to only a minority (Hegarty et al., 2021a, b; Lusk, 2017; Lusk & Johnson, 2022). These findings suggest that public understanding of trans identities may be clearer than understanding of intersex.

1.1 Drivers of positive attitudes towards trans and intersex people

A growing body of research has identified several demographic, social, and psychological predictors of supportive attitudes towards trans individuals. These include being assigned female, having a non-heterosexual orientation, and exhibiting low levels of religiosity (Anderson, 2023; Elischberger et al., 2016; Gegenfurtner, 2021; Nagoshi et al., 2019; Norton & Herek, 2013). Interpersonal contact with trans people has also been shown to reduce prejudice (Barbir et al., 2017; Earle et al., 2021; Hackimer et al., 2021; Worthen et al., 2019). Psychological factors such as lower need for cognitive closure – defined as a preference for clear, unambiguous answers and an aversion to uncertainty – are associated with more positive attitudes (Arcieri & DeLucia, 2022; Morgenroth et al., 2021; Norton & Herek, 2013). Associating trans identities with the broader concept of gender identity leads to more positive attitudes (Reiman et al., 2023).

Sex and gender binary beliefs play an important role in the social perception of sex and gender minority people (Haase et al., 2025; Morgenroth et al., 2021; Reis, 2022; Roen, 2004). Binary beliefs refer to the idea that 'sex' and 'gender' are both congruent, mutually exclusive and unchangeable dichotomies of female and male, with genitalia acting as the essential basis for this binary classification (Schweizer et al., 2012). Rejecting a binary conception and endorsing more fluid or nonbinary understandings of sex and gender is associated with more positive attitudes towards trans individuals (Norton & Herek, 2013). Despite evidence of natural variation, such as intersex bodies (Carpenter, 2020), binary beliefs remain widespread (Worthen, 2020). Binary beliefs uphold a system that privileges sex- and gender-normative individuals while marginalising those who are poorly described by them (Worthen, 2016). In sum, binary beliefs deny the existence of trans and intersex people and obscure the recognition of their needs, including the needs of trans and intersex school children.

While binary beliefs have implications for both trans and intersex people, we sought to examine if they have similar or different implications for teachers' attitudes

towards trans and intersex individuals. Social psychologists conceptualise beliefs and attitudes as related but distinct. Binary beliefs represent an overarching ideological framework about sex and gender norms (Morgenroth et al., 2021; Saguy et al., 2021), whereas attitudes represent responses to social categories that challenge these norms (Billard, 2018). This distinction between beliefs and attitudes aligns with models such as the Theory of Planned Behaviour (Ajzen, 1991), which differentiates background beliefs from behaviour-guiding attitudes, and with Social Identity Theory (Tajfel & Turner, 1979), which highlights the influence of group norms on responses to outgroups.

Research on attitudes towards intersex people is both more scarce and more recent than research on attitudes towards trans people. However, the few existing studies have found that being male and heterosexual is associated with supporting medical interventions that align intersex bodies with binary female/male categories in accordance with prevailing medical norms, and opposing to human rights-based laws that would limit medical interventions (Hegarty et al., 2021a, b; Hegarty & Smith, 2023; Kingsbury & Hegarty, 2022). Additionally being a Christian was predictive of seeing intersex variations as illnesses that need to be "corrected" in one US study (Lusk & Johnson, 2022). Endorsement of a binary view of gender has also been found to predict positive attitudes towards medical interventions for intersex variations and negative attitudes towards setting legal limits on such interventions (Hegarty et al., 2021a, b; Kingsbury & Hegarty, 2022).

In summary, several variables have been found to predict attitudes towards both trans people and intersex people including the demographic variables of gender, sexual orientation, and religiosity, and the psychological variables of binary beliefs and need for cognitive closure. However, intergroup contact has only been assessed in relation to trans people thus far. Accordingly, we focused on these demographic and psychological variables in this study predicting attitudes towards trans and intersex people among trainee teachers. By using an experimental design, this study also innovates by assessing whether these variables are equally predictive of attitudes towards trans and intersex people.

1.2 The conceptualisation of attitudes

Previous studies conceptualised and measured attitudes towards trans and intersex individuals as a single attitudinal variable. In contrast, we tested our hypotheses using the ABC model of attitudes. This tripartite model offers a multidimensional framework that goes beyond unidimensional approaches by acknowledging the complexity of attitudes (Edwards, 1990; Smith & Kirby, 2009). It conceptualises distinct and related affective, behavioural, and cognitive components of attitudes (Breckler, 1984; Zanna & Rempel, 2008). The affective component (A) refers to the emotional responses or feelings directed towards these individuals, such as discomfort. The behavioural component (B) captures the intended actions towards target groups based on these attitudes, such as supporting trans and intersex individuals. The cognitive component (C) encompasses the beliefs, and thoughts about target groups, such as stereotypes and personal convictions. By distinguishing affective, behavioural, and cognitive dimensions, the ABC model allows for a comprehensive

assessment and understanding of how attitudes are formed, structured, and influenced (Haddock & Zanna, 1993). Whilst the model has been shown to have strong predictive power regarding discriminatory actions against sexual minorities (Haddock & Zanna, 1993; Steffens & Preuß, 2020), the current study is the first that applies it to attitudes towards trans and intersex individuals. The model particularly allowed us to test our hypothesis that attitudes towards intersex people may be more favourable than those towards trans people across all three affective, behavioural, and cognitive components – and if the predictors of these attitudes are the same or different across target groups and attitude components.

1.3 The importance of education to protect trans and intersex people from human rights violations

We focused on trainee teachers who would work with trans and intersex students in their future careers for a reason. Trans (Jäggi et al., 2018) and intersex individuals (Hart & Shakespeare-Finch, 2022) share experiences of violence, pathologisation and human rights violations despite their different bodies and identities. These forms of discrimination, which occur in different social contexts and not only in medical settings, are highlighted in a background note by the Office of the High Commissioner for Human Rights (OHCHR), providing a detailed analysis of human rights violations affecting intersex people (Carpenter, 2020). This background note also addresses discrimination in education.

WHO and five UN agencies (UNESCO, UNFPS, UNICEF, UN Women, UNAIDS) have developed an international evidence-based and human rights-based guideline on comprehensive sexuality education. This guideline recognises that people sometimes do not conform to sex and gender norms, and emphasises positive values such as mutual respect, gender equality, and diversity (WHO, 2018). Relatedly, authors have argued for a whole-school approach to the inclusion of trans (Bartholomaeus & Riggs, 2017) and intersex students (Brömdal et al., 2021). Following this approach, sex education ensures an inclusive environment for all students, regardless of gender identity and sex characteristics, while promoting a supportive climate that recognises trans and intersex people (lisahunter et al., 2022). This norm-critical approach moves beyond binary perspectives on sex and gender. Affirming and inclusive sex education increases agency and well-being by supporting young people in developing mutually beneficial relationships and changing normative understandings of sex and gender (Lundberg et al., 2021). It provides sex education that is neither medicalising nor exoticising but normalising (Debus, 2016).

However, national school curricula are often vague on sex and gender diversity issues, as in Switzerland, for example (Hofmann, 2019; Kappler & Schär, 2019). This ambiguity creates space for heteronormative and endosexist materials and policies to persist within schools. In the absence of firm policies and comprehensive educational resources, teachers' understanding of sex and gender diversity issues can make the difference between safe and inclusive schools and those where intimidation and bullying are rife. Without binding guidelines, the important task of ensuring an inclusive environment for all students falls into the hands of individual teachers. It is therefore important to research individual differences in trainee teachers' attitudes.

1.4 Current study and hypotheses

The current study seeks to contribute to the human rights of trans and intersex students, and to social psychological understanding of attitudes towards trans and intersex people by examining a sample of trainee teachers. Our research asked three questions: (1) What knowledge do trainee teachers have about trans and intersex issues? (2) How do they feel, behave, and think towards trans and intersex people? And (3) What are the main predictors of attitudes towards trans and intersex people among trainee teachers? Specifically, we apply the ABC model of attitudes to examine affective, behavioural, and cognitive components of trainee teachers' attitudes towards these groups, and test whether these attitudes are predicted by individual difference variables.

We had two principal hypotheses: Hypothesis 1 predicted that trainee teachers possess greater knowledge about trans than about intersex issues. This hypothesis was informed by the greater visibility of trans than intersex issues in everyday life, media discourse (Littman, 2021; Rauchfleisch, 2023), and past studies which found that popular understandings of the category of intersex people tends to be associated readily with trans and nonbinary people (Hegarty et al., 2021a, b; Kingsbury & Hegarty, 2022).

Hypothesis 2 was informed by the attribution models of stigma which predicts that the perceived controllability of stigmatised characteristics influences social attitudes. Stigma attributed to personal choice tends to elicit more hostility than stigma viewed as biologically determined (Graham & Chen, 2020; Link & Phelan, 2001; Weiner, 1985). We hypothesised that trainee teachers hold more positive attitudes towards intersex people, whose physical sex characteristics are typically viewed as innate and not voluntarily chosen, than towards trans people, whose psychological gender identities may be perceived as more agentic or self-directed.

Hypothesis 3 further predicted that we would replicate previous findings that attitudes towards trans and intersex people are more positive among women than men, non-heterosexuals than heterosexuals, and less religious than more religious groups (Anderson, 2023; Gegenfurtner, 2021; Hegarty & Smith, 2023; Lusk & Johnson, 2022; Nagoshi et al., 2019). Hypothesis 4 also predicted that we would replicate previous findings of associations between attitudes and three individual difference variables: binary beliefs, need for cognitive closure, and interpersonal contact with trans or intersex people. Identifying these predictors is key to uncovering the psychological and contextual drivers of attitudes towards trans and intersex people. Such insights help educators and policymakers develop interventions that address the root causes of bias rather than its surface expressions. In addition to testing our hypotheses, we explored trainee teachers' exposure to trans and intersex topics through their training, teaching practices, and perceptions of institutional policies. These exploratory analyses aimed to contextualise our hypothesis-driven findings by allowing participants to report on the broader educational landscape in which they have started to work, bridging the gap between theory-testing and the practical realities of education.

2 Method

In line with the APA Sexual Orientation and Gender Diversity Writing Guide (Veldhuis et al., 2024), we disclose our reflexivity statement: Our research team spans diverse ages, career stages, and academic backgrounds. We are two German-speaking women and one English-speaking man. All of us European, cisgender and endosex. We represent both straight and gay identities. While none of us have formal teacher training, one team member is a qualified sex educator. We involved trans and intersex counsellors from activist organisations in Switzerland from the outset of our study, in order to broaden our cis-endosex perspective. We are committed to social justice and acknowledge that privilege – whether related to gender identity, language, nationality, or professional background – shapes access to resources and interpretive frames. We aimed to remain critically aware of how these positionalities influence our research process and interpretations.

2.1 Participants

All participants were enrolled in a training course for pre-service teachers at primary or secondary level in Switzerland. All participants were training to teach pupils from kindergarten to 9th grade. We aimed for a sample size of 300 trainee teachers to ensure sufficient statistical power for factor analyses (Field, 2018). Of 423 participants who gave informed consent, 107 cases were excluded due to missing demographic data, leaving 316 participants in the analyses below.

Participants were asked to declare their legal gender, as stated on official documents, as either female or male. No distinction was made between cis and trans identities. Of the participants, 232 (73%) declared their gender as female and 84 (27%) as male. A second question asked participants to indicate their gender identity. Of these, 213 (67%) identified as female, 76 (24%) as male, 11 (3%) as nonbinary, 5 (2%) as transgender and 1 (0%) as intersex. Ten participants (3%) did not identify with any of these categories or reported that they were unsure. The average age of participants was 25 years ($M = 25.37$, $SD = 6.12$, range of 18–54 years). Participants identified their sexual orientation as heterosexual, ($n = 221$, 70%) and gay, lesbian, bisexual or queer ($n = 78$, 24%). Seventeen participants (6%) reported questioning their sexuality or did not provide information about their sexual orientation. Religiosity was assessed with a single item (*How religious would you describe yourself?*), from 1 (*not at all religious*) to 7 (*very religious*) (Hackimer et al., 2021). Participants reported low levels of religiosity ($M = 2.48$, $SD = 1.76$). All participants had teaching experience through internships, and 40% ($n = 128$) of participants were also working as teachers alongside their studies. More detailed individual information is reported in Appendix A.

2.2 Design

In this study, we employed a between-subjects experimental design to separately assess trainee teachers' knowledge of, and attitudes towards trans and intersex people. This separation was crucial, as intersex issues are generally less visible and often

conflated with trans issues (Hegarty et al., 2021a, b; Kingsbury & Hegarty, 2022). By assigning participants to distinct conditions – focusing either on trans or intersex issues – we aimed to avoid confounding effects. Responses to a combined 'transgender and intersex' category tend to reflect attitudes primarily towards the more familiar trans group (Hegarty & Smith, 2023), thereby obscuring perceptions of intersex individuals.

Participants were randomly assigned to one of two experimental conditions: a transgender condition ($n = 155$) or an intersex condition ($n = 161$) in which they completed items concerning either trans or intersex issues. The term condition refers to experimental design and does not imply that trans identities or intersex variations are medical or psychological "conditions". Based on legal documentation, the transgender condition included 113 women and 42 men, and the intersex condition included 119 women and 42 men.

2.3 Measures and materials

The survey included questions in four areas: (1) knowledge, (2) attitudes, (3) individual characteristics, and (4) training and teaching practices and institutional policies. The content, accuracy, and comprehensibility of the questionnaire were informed by the involvement of a community advisory panel of eight representatives from the trans and intersex community and six one-to-one interviews with trainee teachers. The original German questionnaire and its English translation are available in the supplementary material.

2.3.1 Knowledge

Knowledge was assessed in four ways; (a) self-reported knowledge, which we used for hypothesis testing, (b) open-ended description of either the term *transgender* or the term *intersex*, (c) self-reported understanding of the study definition, and (d) a four-item true-false quiz. First, the self-reported knowledge measure was a single item (*How much do you know already about [trans/intersex] issues?*) scaled from 1 (*nothing at all*) to 7 (*a lot*). Second, the open-ended definition question asked participants to describe the term *transgender* or *intersex* in their own words. Third, participants rated how understandable the definition of transgender or intersex that they read was from 1 (*not at all*) to 7 (*very well*), and how much they had learned from the definition from 1 (*nothing*) to 7 (*very much*) (see Appendix B for the definitions provided). Fourth, a factual knowledge quiz measured understanding of the definition presented (see Supplementary Materials, Questionnaire (p. 8) for the quiz).

2.3.2 Attitudes

Affective, behavioural, and cognitive (ABC) attitudes were measured next.

2.3.2.1 Affective attitudes Two instruments measured affective attitudes. The first *affective response* measure was group-specific, varied by condition, and was used for hypothesis testing. Participants were asked to imagine learning that (a) a friend,

(b) a teacher, and (c) a pupil was [trans/intersex] (Klocke, 2012). For each scenario participants reported their feelings on three scales: dismissive vs. accepting; insecure vs. secure; sad vs. happy from −3 *(negative feelings)* to +3 *(positive feelings)*.

Principal component analysis (PCA) using scree plots of eigenvalues confirmed a one-factor solution for the three aggregated items representing the same pairs of feelings, accounting for 66% of the total variance in the transgender condition and 55% in the intersex condition. All factor loadings were ≥0.80 in the transgender condition and ≥0.71 in the intersex condition. The nine-item measure of affective attitudes showed high internal consistency in both conditions (Cronbach's α=0.91 for transgender condition; α=0.84 for intersex condition).

The second *social distance* measure did not vary by condition and asked participants to indicate how close or distant they felt to women, men, trans women, trans men, nonbinary people, and intersex people, using feeling thermometers ranging from −3 (*negative/cold*) to +3 (*positive/warm*). These six thermometers were completed in a fixed order. This measure was included as a contextual indicator to characterise participants' perceptions of interpersonal proximity. It was not intended for hypothesis testing and is not incorporated into the primary analyses.

2.3.2.2 Behavioural intentions Behavioural intentions were measured via responses to three statements drawn from the *Supportive Public Intentions* Scale (e.g. *I can well imagine attending a lecture on [trans/intersex] issues*) (Barbir et al., 2017). Responses ranged from 1 (*strongly disagree*) to 6 (*strongly agree*). Higher scores indicated greater intentions to be supportive. PCA using scree plots of eigenvalues confirmed a one-factor solution for the three items, explaining 65% of the total variance in both conditions. Factor loadings were ≥0.79 in the transgender condition and ≥0.78 in the intersex condition. Internal consistency was acceptable in both experimental conditions (both Cronbach's α=0.71).

2.3.2.3 Cognitive attitudes Given the German-speaking context and the lack of existing measures assessing cognitive attitudes towards trans and intersex groups, we developed a new 11-item *Transgender and Intersex Cognitive Attitudes (TICA) do not invert* based on previous instruments. Items were selected and modified from three existing scales: the *Genderism and Transphobia* Scale (Hill & Willoughby, 2005), the *Transgender Attitudes and Beliefs* Scale (Kanamori et al., 2017), and the *Attitudes Toward Transgendered Individuals* Scale (Walch et al., 2012). To address conceptual gaps not covered by existing scales, additional items were drawn from *My Gender Workbook* (Bornstein, 1998), which offers an affirming perspective on gender diversity.

Items were selected to address thoughts and beliefs about trans and intersex individuals. The scale captures key cognitive themes, including beliefs about societal value, the importance of public education and awareness, positive evaluations such as admiration and acceptance, and negative beliefs that pathologise or delegitimise trans and intersex identities. A key challenge was to define items that are meaning-

ful and applicable to both trans and intersex individuals, due to the experimental design. Items were adapted for linguistic clarity and cultural appropriateness within the German-speaking context. To enhance reliability and reduce acquiescence bias, both positively and negatively worded items were included. Where available, items with strong psychometric properties in the original scales were prioritised. The initial item pool was limited to 11 items to ensure conceptual coverage while keeping participants engaged. All items were rated on a 6-point scale (1 = strongly disagree to 6 = strongly agree), with higher scores indicating more positive attitudes. The 11 items were analysed by examining item-total correlations and applying factor analysis procedures both separately for the transgender and intersex conditions and on the aggregated data from both experimental conditions. For item-total correlations and item loadings, see Appendix C. We weighted the results of the separate analyses for the two experimental conditions and the overall analysis to isolate only items that were appropriate for both experimental conditions. Three poorly performing items that correlated low with the total score in the intersex condition were removed. PCA using scree plots of eigenvalues confirmed a one-factor solution for the remaining eight items, accounting for 49% of the variance in the intersex condition, and 71% in the transgender condition. All items loaded strongly on the factor (≥ 0.76) in both conditions. Internal consistency was good, with Cronbach's $\alpha = 0.82$ (intersex) and $\alpha = 0.93$ (transgender). We averaged the eight item scores to form an aggregate measure of cognitive attitudes.

Moreover, *school-related* cognitive attitudes towards the value of gender diversity issues in schools were measured with four items adapted from (Klocke, 2012; Klocke et al., 2019) (e.g. *[Trans/Intersex] issues should be addressed in schools*). Ratings ranged from 1 (*strongly disagree*) to 6 (*strongly agree*) with higher scores indicating more positive attitudes. The Cronbach's alpha was 0.87 for both experimental conditions.

2.3.3 Individual characteristics

Participants provided demographic information, including their legal gender as recorded on official documents (e.g., cisgender, transgender), self-described sex/gender, age, sexual orientation, place and level of education, and religiosity.

2.3.3.1 Binary beliefs Due to the lack of a suitable measurement instrument for the German-speaking context, we developed a new 12-item *Binary Beliefs do not invert*, grounded in the model proposed by Schweizer et al. (2012). Items were selected from four established scales that address sex and gender norms and beliefs – namely, the *Heteronormative Attitudes and Beliefs* Scale (Habarth, 2015), the *Beliefs about Gender* Subscale (Tee & Hegarty, 2006), the *Transgender Attitudes and Beliefs* Scale (Kanamori et al., 2017), and the *Transphobia* Scale (Nagoshi et al., 2008). Items were adapted to reflect the cultural and linguistic context of the target sample with the aim of capturing beliefs about the naturalness, stability, and exclusivity of binary sex and gender categories, including assumptions about biological determinism, sex assignment at birth, and the perceived legitimacy of nonbinary identities. Twelve items with strong psychometric properties in the original scales were used. The final item pool

included both affirmations of binary thinking and statements that challenge it, allowing for a nuanced assessment of participants' beliefs. Responses were recorded on a 6-point scale (1 = strongly disagree to 6 = strongly agree), with higher scores reflecting stronger endorsement of binary beliefs about sex and gender.

To ensure internal consistency, the 12 items were analysed by examining the distribution of the data, item-total correlations, and factor analysis. For item-total correlations and item loadings, see Appendix D. Five items were removed: two items due to content redundancy and extremely high correlations with two other items, two items due to extreme skewness and therefore low variability, and one item due to relatively low communality (0.45). PCA using scree plots of eigenvalues confirmed one factor for the remaining seven items, accounting for 68% of the total variance. Factor loadings on the first principal component were 0.71 or higher for all 7 items of the *Binary Beliefs* Scale (e.g. *I think there are two genders*, *female and male*). The scale was reliable in both the transgender and intersex conditions (Cronbach's $\alpha = 0.93$, 0.90 respectively).

2.3.3.2 Need for cognitive closure Following Schweiger et al. (2019), six items from an initial 16-item scale by Schlink and Walther (2007) were selected to measure the need for cognitive closure (e.g. *I don't like unpredictable situations*). Ratings ranged from 1 (*strongly disagree*) to 6 (*strongly agree*), with higher scores indicating a greater need for cognitive closure and lower tolerance for ambiguity. The internal consistency of this measure was questionable in both experimental conditions (Cronbach's $\alpha = 0.65$), but comparable to reliability estimates reported in previous studies (Schweiger et al., 2019).

2.3.3.3 Contact Interpersonal contact was assessed with two questions similar to those used in previous studies (Weber, 2022; Worthen et al., 2019): (1) *Have you ever known a [trans/intersex] person personally* (yes/no); (2) *If so*, *how did you relate to this person* (family, relatives, close friends, neighbours, school/work or leisure). In addition, three items were used to assess indirect contact with trans or intersex people via social media, video, or messenger services (for example, *Have you ever had contact with a [trans/intersex] person via social media?* yes/no). For hypothesis testing, only the first item – personal contact (yes/no) – was included in the analyses. The remaining items served to provide descriptive context.

2.3.4 Training and teaching practices and institutional policies

Eleven questions asked participants to report their experiences of their training (e.g. *As a teacher or in your internship*, *have you ever been in contact with a [trans/intersex] child?*), their teaching practices (e.g. *Do you know if the current curriculum allows trans and intersex topics to be addressed in the classroom?*), and institutional policies (e.g., *Does your school have a policy on how to deal with [trans/intersex] pupils?*). The questions are based on a German questionnaire on the acceptance of

sexual diversity (Klocke, 2012; Klocke et al., 2019), expanded with questions related to current societal discourses on gender diversity.

2.4 Procedure

Participants were recruited via mailing lists at two Swiss universities of teacher education. The data were collected between November 2022 and January 2023. Participation was voluntary. As an incentive, participants were provided with a set of downloadable brochures with selected addresses and recommendations, and the opportunity to participate in an online gender diversity training session led by the principal investigator. Ethical approval was granted by the Ethics Committee of the University of Bern, in accordance with the regulations in force.

2.5 Analytic strategies

We used independent samples *t*-test to test Hypotheses 1 and 2 regarding condition differences in knowledge and attitudes. A Bonferroni-corrected alpha was applied to control for multiple comparisons ($p<.01$). Two-sided p-values are reported for Hypotheses 1 and 2. Effect sizes are reported as Cohen's d with corresponding 95% confidence intervals to indicate the precision of the estimates. We calculated the Pearson and Phi coefficients to assess the association between the variables of legal gender, sexual orientation, and religiosity and the three ABC components of attitudes. Hierarchical regression analyses were conducted to identify the significant predictors of unique variance in affective, behavioural, and cognitive attitudes towards trans and intersex people to test Hypothesis 4. To categorise participants' open-ended definitions of *transgender* or *intersex*, we used a mixed inductive-deductive approach. Categories were defined by deductive reasoning, depending on how detailed and factual the description was. Recurring themes were then identified inductively and interpreted, considering the established definitions of the relevant terms. Based on this process, thematic categories were developed, and responses were systematically coded. Coding was conducted by a study researcher and repeated twice over several weeks to ensure consistency.

3 Results

3.1 Knowledge of trans and intersex issues

First, as Hypothesis 1 predicted, participants reported knowing significantly more about trans ($M=4.55$, $SD=1.21$) than about intersex issues ($M=4.07$, $SD=1.16$; $t(314)=3.60$, $p<.001$, $d=0.40$). Second, the open-ended measure showed that 83% of participants correctly described transgender as an incongruence between sex assigned at birth and gender identity, but only 54% correctly described intersex as a variation in sex characteristics (see Appendix E for examples of open responses, categories and their frequencies). Third, participants reported understanding the definition of trans ($M=6.54$, $SD=0.70$) better than the definition of intersex ($M=6.30$, $SD=0.96$;

$t(293.61) = 2.51$, $p = .01$, $d = 0.28$). However, participants reported learning significantly more from the definition of intersex ($M = 4.62$, $SD = 1.71$) than from the definition of transgender ($M = 3.14$, $SD = 1.67$; $t(314.) = -7.78$, $p < .001$, $d = -0.87$). Finally, participants largely chose the correct statements in both the transgender (97%) and intersex (92%) conditions on the final four-item true-false quiz.

3.2 The ABC components of attitudes

The ABC model allowed us to assess whether attitudes towards trans and intersex groups were unidimensional or multidimensional. Significant positive correlations between the ABC components of attitudes were observed, and these were mostly medium to large (Table 1). Overall, stronger correlations were found in the transgender condition. These findings justified our treatment of the ABC components as distinct but related variables below.

3.2.1 Affective attitudes

Hypothesis 2 predicted that ABC attitude components would be more positive in the intersex condition than in the transgender condition. Hypothesis 2 was tested using the measure of affective response. Contrary to expectations, affective responses were similarly positive in both the transgender and intersex conditions (transgender: $M = 1.73$, $SD = 1.10$; intersex: $M = 1.66$, $SD = 0.86$; $t(292.30) = 0.69$, $p = .49$, $d = 0.08$).

In terms of social distance, all six gender groups were rated positively in both conditions (cis women: $M = 2.23$, $SD = 1.15$ in the transgender condition/$M = 2.42$, $SD = 0.99$ in the intersex condition; cis men: $M = 1.59/1.78$, $SD = 1.25/1.30$; trans women: $M = 1.71/1.79$, $SD = 1.36/1.35$; trans men: $M = 1.68/1.83$, $SD = 1.39/1.28$; nonbinary people: $M = 1.43/1.68$, $SD = 1.55/1.43$; intersex people: $M = 1.65/1.84$, $SD = 1.37/1.23$). A repeated-measures ANOVA revealed a significant main effect of sex and gender groups on social distance ratings, $F(2.66, 495) = 33.12$, $p < .001$, $\eta_p^2 = 0.42$ (Greenhouse–Geisser correction applied). Post hoc comparisons with Bonferroni adjustment indicated that cis women were rated significantly more positively than all other groups ($p < .001$), whereas nonbinary individuals were rated significantly less positively than cis women, trans women and trans men ($p < .001$).

3.2.2 Behavioural intentions

Contrary to Hypothesis 2, participants reported equally positive behavioural intentions in the transgender condition ($M = 4.58$, $SD = 1.33$) and the intersex condition ($M = 4.43$, $SD = 1.26$; $t(314) = 1.04$, $p = .30$, $d = 0.12$).

3.2.3 Cognitive attitudes

Supporting Hypothesis 2, cognitive attitudes were significantly more positive towards intersex ($M = 5.68$, $SD = 0.58$) than trans people ($M = 5.43$, $SD = 0.97$; $t(248.71) = -2.72$, $p = .01$, $d = -0.31$). However, participants expressed similarly positive school-

Table 1 Correlations of outcome, control and predictor variables by experimental condition

Variable	1	2	3	4	5	6	7	8	9	10	11
1. Knowledge	–	0.22**	0.23**	0.05	0.21**	−0.00	0.38**	−0.09	−0.22**	−0.12	−0.36**
2. Affective attitudes	0.17*	–	0.64**	0.69**	0.61**	−0.08	0.28**	−0.16*	−0.65**	−0.22**	−0.25**
3. Behavioural intentions	0.26**	0.40**	–	0.74**	0.84**	−0.22**	0.27**	−0.27**	−0.82**	−0.23**	−0.14
4. Cognitive attitudes	0.04	0.49**	0.51**	–	0.75**	−0.14	0.17*	−0.30**	−0.79**	−0.17*	−0.17*
5. School-related attitudes	0.22*	0.36**	0.72**	0.58**	–	−0.19*	0.22**	−0.19*	−0.82**	−0.26**	−0.13
6. Legal gender (1=women, 2=men)	0.10	−0.12	−0.17*	−0.29**	−0.19*	–	−0.04	−0.09	0.13	−0.03	−0.06
7. Sexual orientation (1=heterosexual, 2=non-heterosexual)	0.26**	0.25**	0.34**	0.16*	0.18*	−0.06	–	0.14	0.33**	0.05	−0.26**
8. Religiosity	−0.05	−0.14	−0.22**	−0.11	−0.12	−0.04	0.26**	–	0.31**	0.11	0.08
9. Binary beliefs	−0.24**	−0.41**	−0.61**	−0.64**	−0.59**	0.24**	0.34**	0.38**	–	0.14	0.17*
10. Cognitive closure	0.02	−0.18*	−0.13	−0.03	−0.11	−0.20**	0.11	0.10	−0.02	–	0.18*
11. Personal contact (1=yes, 2=no)	−0.21**	0.02	−0.08	0.19*	−0.04	−0.17	−0.07	−0.02	0.03	0.17*	–

Coefficients for the transgender condition (n = 155) are above the diagonal; those for the intersex condition (n = 161) are below the diagonal. Pearson coefficient applied to continuous variables, Eta coefficient to nominal and continuous variables, Phi coefficient to nominal variables. Values < 0.30 indicate a small, 0.30–0.50 a medium and < 0.50 a large effect size

*p <.05 and **p <.01 (2-tailed)

related attitudes towards addressing trans (M=4.85, SD=1.20) and intersex issues (M=4.93, SD=1.09; $t(314) = -0.57$, p=.57, d=−0.06).

3.2.4 Gender, sexual orientation, and religiosity as predictors of attitudes

Hypothesis 3 concerned the relationship between the demographic variables-legal gender, sexual orientation, and religiosity-and the ABC components of attitudes (see Table 1). The results support Hypothesis 3. First, women reported significantly more positive behavioural and school-related cognitive attitudes in the transgender condition than men did, and women reported more positive behavioural, cognitive and school attitudes in the intersex condition than men did. Second, heterosexual-identified participants reported more negative attitudes than lesbian, gay, bisexual or queer participants on all ABC components of attitudes in both experimental conditions. Finally, low levels of religiosity were significantly associated with positive ABC components and school-related attitudes in the transgender condition, but only with the behavioural component of attitudes in the intersex condition. Whilst, these findings replicate those of other researchers (e.g. Anderson, 2023; Lusk & Johnson, 2022), the correlations between demographic variables and the ABC variables had consistently small effect sizes.

3.3 The role of psychosocial variables in predicting attitudes

The zero-order correlations between the individual difference variables of binary beliefs, need for cognitive closure (NCC), and contact, and the ABC components of attitudes are also reported in Table 1. Low levels of binary beliefs were consistently associated with more positive attitudes towards trans and intersex people on all three attitude components (see Table 1). Effect sizes were medium to high in the transgender condition and weak to medium in the intersex condition. Significant weak correlations between low levels of NCC and positive attitudes were observed in the transgender condition. In the intersex condition, NCC was significantly negatively correlated only with affective attitudes. The correlations between interpersonal contact and attitudes varied across conditions. A significant positive correlation was found between cognitive attitudes and interpersonal contact with intersex people, while significant negative correlations were found between affective and cognitive attitudes, and interpersonal contact with trans people.

To test Hypothesis 4, six hierarchical regression models were calculated to predict variance in affective, behavioural and cognitive attitudes towards trans and intersex people. At Step 1 of each model, gender, sexual orientation, and religiosity were entered. At Step 2, binary beliefs, NCC and existing contact were added. Since the assumptions of normal distribution of the residuals and homoscedasticity were at least partially violated and did not meet the conditions for linear regression analysis, bootstrapping was performed with a sample size of 1000 (Bishara & Hittner, 2015; Pek et al., 2018).

At Step 1, legal gender, sexual orientation, and religiosity explained 9–18% of the variance in the three attitude components across the two target groups (see Table 2). Sexual orientation emerged as the most important of the three variables predicting

Table 2 Summary of hierarchical regression analysis for demographic and psychosocial variables predicting ABC attitudes by experimental condition

Predictor	Transgender Condition									Intersex Condition								
STEP 1	Affective			Behavioural			Cognitive			Affective			Behavioural			Cognitive		
	B [95% CI]	*SE*	Beta	*B* [95% CI]	*SE*	Beta	*B* [95% CI]	*SE*	Beta	*B* [95% CI]	*SE*	Beta	*B* [95% CI]	*SE*	Beta	*B* [95% CI]	*SE*	Beta
(Constant)	1.41 [0.61, 2.3]	0.43		5.10 [4.15, 6.08]	0.52		5.95 [5.29, 6.61]	0.37		1.53 [−0.85, 2.18]	0.34		4.26 [3.31, 5.23]	0.49		6.03 [5.70, 6.51]		
Legal Gender	−0.20 [−0.65, 0.19]	0.21	−0.08	**−0.70**** [−1.15, −0.21]	0.24	−0.23	−0.36 [−0.83, 0.06]	−0.19	−0.16	−0.21 [−0.52, 0.12]	0.16	−0.11	−0.46 [−0.96, 0.02]	0.26	−0.16	−0.37* [−0.69, −0.12]	0.15	−0.29
Sexual Orientation	**0.60**** [0.20, 0.97]	0.19	0.25	**0.66**** [0.21, 1.14]	0.23	0.22	0.27 [−0.07, 0.58]	0.16	0.13	**0.40**** [0.11, 0.71]	0.15	0.22	**0.79**** [0.35, 1.16]	0.21	0.29	0.15 [−0.04, 0.32]	0.09	0.12
Religiosity	−0.08 [−0.19, 0.03]	0.05	−0.13	**−0.19**** [−0.30, −0.07]	0.06	−0.26	**−0.16**** [−0.27, −0.05]	0.05	−0.30	−0.06 [−0.14, 0.03]	0.04	−0.12	**−0.12*** [−0.25, −0.01]	0.06	−0.16	−0.03 [−0.08, 0.01]	0.02	−0.10
R^2	0.09			0.18			0.13			0.09			0.16			0.11		
F(df)	5.13(3, 149)			10.85 (3, 149)			7.68 (3, 149)			5.14 (3,156)			10.25 (3,156)			6.68 (3,156)		
STEP 2																		
(Constant)	3.69 [2.6,4.69]	0.53		7.64 [6.83, 8.41]	0.42		7.76 [6.94, 8.54]	0.46		2.61 [1.53, 3.73]	0.55		6.51 [5.12, 7.94]	0.77		6.42 [5.90, 6.96]	0.29	
Legal Gender	−0.01 [−0.30, 0.30]	0.15	−0.00	**−0.37**** [−0.65, −0.08]	0.14	−0.12	−0.12 [−0.39, 0.14]	0.12	−0.06	−0.10 [−0.40, 0.21]	0.15	−0.05	−0.19 [−0.63, 0.22]	0.22	−0.06	−0.15 [−0.31, −0.00]	0.08	−0.11
Sexual Orientation	0.10 [−0.19, 0.40]	0.16	0.04	0.01 [−0.30, 0.31]	0.14	0.00	−0.23 [−0.49, 0.03]	0.12	−0.11	0.21 [−0.05, 0.50]	0.14	0.11	0.37 [−0.01, 0.73]	0.19	0.14	−0.05 [−0.23, 0.10]	0.08	−0.04
Religiosity	04 [−0.05, 0.12]	0.04	0.06	−0.02 [−0.09, 0.05]	0.04	−0.03	−0.04 [−0.09, 0.01]	0.03	−0.07	0.01 [−0.06, 0.08]	0.04	0.02	0.02 [−0.06, 0.10]	0.05	0.03	0.05 [0.00, 0.10]	0.03	0.15

Table 2 (continued)

Predictor	Transgender Condition									Intersex Condition								
STEP 1	Affective			Behavioural			Cognitive			Affective			Behavioural			Cognitive		
	B [95% CI]	*SE*	Beta	*B* [95% CI]	*SE*	Beta	*B* [95% CI]	*SE*	Beta	*B* [95% CI]	*SE*	Beta	*B* [95% CI]	*SE*	Beta	*B* [95% CI]	*SE*	Beta
Binary Beliefs	**−0.47**** [−0.58, −0.35]	0.06	−0.61	**−0.71**** [−0.80, −0.61]	0.05	−0.78	**−0.52**** [−0.62, −0.40]	0.06	−0.78	**−0.26**** [−0.37, −0.13]	0.06	−0.37	**−0.58**** [−0.75, −0.41]	0.08	−0.56	**−0.33**** [−0.44, −0.19]	0.06	−0.70
Cognitive Closure	−0.16 [−0.35, 0.01]	0.09	−0.12	**−0.20*** [−0.34, −0.07]	0.07	−0.12	−0.06 [−0.18, 0.05]	0.06	−0.05	**−0.21**** [−0.37, −0.08]	0.07	−0.20	**−0.21*** [−0.42, 0.01]	0.10	−0.13	−0.09 [−0.18, 0.00]	0.05	−0.13
Personal Contact	−0.26 [−0.54, 0.02]	0.14	−0.12	0.03 [−0.21, 0.28]	0.13	0.01	−0.06 [−0.30, 0.11]	0.10	−0.05	0.13 [−0.13, 0.37]	0.14	−0.06	−0.14 [−0.52, 0.25]	0.19	−0.05	**0.29*** [0.08, 0.47]	0.11	0.21
R^2	0.45			0.69			0.64			0.22			0.42			0.50		
F(df)	20.35 (6, 146)			55.32 (6, 146)			43.31 (6, 146)			7.38 (6, 153)			18.18 (6, 153)			25.83 (6, 153)		

Transgender condition $n = 155$, intersex condition $n = 161$. *CI* confidence interval, *LL* lower limit, *UL* upper limit

Legal gender was coded 1=women, 2=men. Sexual orientation was coded 1=heterosexual, 2=non-heterosexual. Interpersonal contact was coded 1=yes, 2=no

Bootstrap for coefficient based on 1000 bootstrap samples. Beta for standardised coefficient shown

*p <.05. **p <.01. The significances are in bold

unique variances in affective attitudes and behavioural intentions, in both experimental conditions. Gender and religiosity were sometimes predictive of more negative behavioural intentions and cognitive attitudes but never predictive of affective attitudes.

At Step 2, the addition of the three psychological variables led the models to explain 22 to 69% of the variance in attitude components across the two groups. These models predicted a greater proportion of variance in behavioural intentions and cognitive attitudes than in affective attitudes, and a greater proportion of variance in attitudes towards trans than intersex people. Among the three variables of legal gender, sexual orientation, and religiosity, only legal gender predicted unique variance in behavioural intentions within the transgender condition. None of the demographic variables were significant predictors of any attitudes in the intersex condition at Step 2. Binary beliefs consistently predicted significant unique variance across all models. Need for cognitive closure predicted significant unique variance in one transgender and two intersex models. Interpersonal contact predicted significant unique variance only for cognitive attitudes towards intersex people. These results support Hypothesis 4.

3.4 Training and teaching experiences and school policies

The analysis of trainee teachers' training and teaching practices with trans and intersex topics and their perception of institutional policies were analysed next. Few participants reported (1) having contact with a trans (12%) or an intersex (5%) child in school, (2) addressing the general transgender (7%) or intersex topics (6%), or (3) addressing the protection of trans (7%) or intersex people (3%) from discrimination. Few participants had made their pupils aware of resources for LGBTIQ + young people (transgender: 15%, intersex: 23%), or supported them with a professional workshop (transgender: 9%, intersex: 12%). A larger minority had teaching materials available on sex and gender diversity topics (transgender: 37%, intersex: 24%). 75% of participants reported that trans and intersex topics were not covered in their training. More than half the participants either felt that the current curriculum does not allow trans (62%) and intersex (55%) topics to be addressed in the classroom or were unsure if it did or not. Few participants reported their school had policies on trans or intersex individuals (transgender: 4%, intersex: 9%), that teachers were well-versed in these topics (transgender: 28%, intersex: 26%), or that sex and gender diversity was visible in the school (transgender: 6%, intersex: 3%). The frequencies of trans and intersex topics in training and teaching experiences and school policies are shown in more detail in Appendix F.

4 Discussion

This study aimed to describe the knowledge of trainee teachers about trans and intersex issues, their attitudes towards trans and intersex people, and the key predictors of those attitudes. Four main findings emerged: First, knowledge of trans issues was significantly higher than knowledge of intersex issues (Hypothesis 1). Second, all

ABC attitudes towards trans and intersex people were positive. Hypothesis 2 was largely refuted, as only cognitive attitudes were significantly more positive towards intersex people than towards trans people. Third, binary beliefs emerged as by far the strongest and most robust predictor of all components of trainee teachers' attitudes towards both trans and intersex people. Specifically, lower levels of binary beliefs were strongly predictive of more positive attitudes towards trans and intersex people. Finally, trainee teachers reported that trans and intersex topics were relevant to their teaching practice, but that they lacked the experience and training to address these topics in their classrooms.

We assessed teachers' knowledge of, and attitudes towards trans and intersex people separately in an experimental design, in part out of concerns to get clear distinct responses about intersex that were not simply associations to trans people and related issues (Hegarty & Smith, 2023). The experimental study yielded empirical evidence that participants' understandings of trans people were more distinct than their understandings of intersex people, justifying this methodological concern and approach. First, participants reported having greater knowledge of trans issues and provided more accurate definitions of transgender, yet rated the study's definition of intersex as more informative than the definition of transgender. Second, whenever reliability differed by condition, the measures were more reliable in the transgender than in the intersex condition, suggesting that participants had more coherent concepts of trans than intersex groups. Third, the components of the ABC attitudes were more highly correlated in the transgender than in the intersex condition. Fourth, those attitude components were more meaningfully related to individual variables in the transgender than in the intersex condition. Fifth, the regression models predicted more variance in the transgender than in the intersex condition.

These empirical results have several interpretations: Whilst it is possible that the questions used in our study were more suitable for assessing knowledge of, and attitudes towards trans people, a parsimonious explanation for all these results is that attitudes towards trans people are more unified and coherent than attitudes towards intersex people. These empirical differences might not have been evident if we had solicited responses to the two groups sequentially, allowing participants' conceptions of trans people to influence their responses to attitude items about intersex people (Hegarty & Smith, 2023; Steffens & Preuß, 2020; Worthen, 2013). Only cognitive attitudes were significantly more positive towards intersex than towards trans people. It is possible the definitions of 'transgender' or 'intersex' provided in the study contributed to significant differences in cognitive attitudes, but not in the affective or behavioural components. It is particularly informative that we did not observe differences in affective attitudes, given that emotional reactions are theorised to mediate the link between causal attributions and stigma (Schmidt & Weiner, 1988).

Overall, psychosocial factors were stronger predictors of attitudes than demographic variables of legal gender, sexual orientation, and religiosity. This study replicated earlier findings that sexual orientation and religiosity account for individual differences in attitudes towards trans (Hatch et al., 2022) and intersex people (Hegarty et al., 2021a, 2021b; Lusk & Johnson, 2022). Binary beliefs consistently moderated the effects of sexual orientation and religiosity across all three attitude components and for both groups. These results conceptually replicate previous find-

ings that negative attitudes towards trans (Broussard & Warner, 2019) and intersex people (Kingsbury & Hegarty, 2022) can be attributed to binary beliefs. They also extend these findings by studying a novel population in a German-speaking context. The impact of some predictors varied unexpectedly by target group and attitude component. Legal gender predicted behavioural intentions in the transgender condition only. Need for cognitive closure significantly accounted for unique variance in only one transgender but in two intersex models, suggesting that a stronger desire for clear, unambiguous categories may impact attitudes towards intersex groups more consistently than attitudes towards trans people.

4.1 Study limitations and future research

To the best of our knowledge, this is the first study to: (1) differentiate between affective, behavioural, and cognitive components of attitudes according to trans and intersex groups, and (2) compare attitudes towards these groups using an experimental design with random assignment to condition. In addition to providing a detailed understanding of trainee teachers' attitudes towards sex and gender diversity, this study represents a methodological and conceptual development in the field of research on these often-conflated groups. However, it is important to acknowledge some potential limitations of the study that point the way to future research directions.

First, the study found significantly more positive cognitive attitudes, but not more positive affective and behavioural attitudes towards intersex people than towards trans people, raising the possibility of methodological artefacts. Participants were cognitively primed with definitions, which may have shaped their responses. Two explanations are plausible: response bias due to uneven framing, and a methodological artefact, as cognitive components are more sensitive to definitional priming than affective or behavioural ones. Alternative stimuli, such as emotionally rich film narratives, might have produced different results, and future research should explore this possibility. Moreover, these findings should be interpreted cautiously from an endosexist perspective: positive attitudes may coexist with structural invisibility or tokenistic inclusion. Endosexism privileges bodies that conform to binary norms (Carpenter et al., 2023), limiting meaningful inclusion even when explicit attitudes appear supportive. Thus, positive ratings may reflect abstract endorsement rather than practical commitment. Future research should examine whether these attitudes translate into concrete actions and address implicit biases that sustain endosexist norms in educational contexts.

Second, the use of the umbrella term 'transgender' for one experimental condition warrants caution. While appropriate for the present study, this approach may have masked important subgroup differences. Prior research indicates that attitudes towards trans women and trans men represent distinct constructs rather than a single dimension (Billard, 2018). Moreover, emerging evidence (e.g.Perez-Arche & Miller, 2021) and our results suggest that attitudes towards nonbinary individuals differ from those towards trans people, with nonbinary individuals rated less positively than trans women, and trans men. In line with recommendations for separate analyses of

attitudes towards different sexual and gender minority subgroups (Worthen, 2013) future research should examine attitudes towards trans subgroups separately to capture more nuanced patterns.

Third, while several measures showed reliability, it is more difficult to provide convincing evidence of construct validity. The findings raise the question of whether equivalent measures can be developed for trans and intersex outcomes, given that one category appears more conceptually grounded than the other. The rather positive attitudes towards trans and intersex people and the level of knowledge of the trainee teachers surveyed may also reflect sample characteristics: voluntary participation was rewarded with training, likely attracting open-minded individuals. Moreover, the sample was predominantly women, which may have influenced the results, as gender identity can shape attitudes towards gender diversity. These findings may not generalise to less liberal or more gender-diverse samples. Relatedly, responses may have been affected by social desirability bias, especially considering the sensitivity of the topic. Future research might include measures that control for social desirability and aim for more balanced samples to test generalisability across genders.

A further consideration is the role of perceived controllability in shaping attitudes. Including items such as "Being trans is a matter of choice" could help contextualise the more positive ratings of intersex people. Although controllability was considered conceptually, it was not directly measured. Future research should examine this construct systematically as a potential predictor of attitudinal differences.

Finally, given that the Binary Beliefs measure was the strongest predictor of affective, behavioural, and cognitive attitudes towards both trans and intersex people, the question arises as to which other variables may in turn explain or mediate these beliefs. High levels of gender identification and need for cognitive closure tend to correlate with more binary beliefs of sex and gender (Morgenroth et al., 2021). From a social psychological perspective, models such as the Theory of Planned Behavior (Ajzen, 1991) and the Social Identity Theory (Tajfel & Turner, 1979) suggest that subjective norms, identity processes, and social categorisation may shape foundational belief systems like binary beliefs. Future research could investigate antecedents of these beliefs and explore how they can be challenged or changed, as this may offer more effective pathways for fostering inclusive attitudes towards trans and intersex people.

In line with the whole-school approach to fostering inclusive educational environments and human rights (Bartholomaeus & Riggs, 2017; Brömdal et al., 2021), future research could include others with key roles that impact the education of children, such as headteachers, school administrators, and policy makers. Their leadership practices may impact how institutional policies shape norms and attitudes towards sex and gender diversity. As pupils actively contribute to the social climate of schools (Forsberg et al., 2021; Murrar et al., 2020); studying their knowledge of, and attitudes towards trans and intersex people will provide valuable insights into peer-level dynamics. Finally, studying parents could provide a broader perspective

on the cultural context in which education takes place. Together, these extensions would support a more comprehensive and systemic understanding of how attitudes towards sex and gender minorities are formed and maintained across a whole school community.

4.2 Implications for education

This study described the school-related attitudes and experiences of trainee teachers who generally seem more willing to pro-actively support trans and intersex students than the contexts in which they work suggests. Many education curricula, including sex education curricula, are vague on sex characteristic and gender diversity topics and few include an informed and affirming understanding of trans identities and intersex variations, internationally (Mayo, 2022) – or in Switzerland (Hofmann, 2019; Kappler & Schär, 2019). Few trainee teachers reported having studied these topics during their university training. The findings suggest that they would welcome up-to-date guidance on trans and intersex topics supporting the development of inclusive, affirming and supportive whole-school approaches (Bartholomaeus & Riggs, 2017; Brömdal et al., 2021).

Another consideration is the introduction of interventions addressing binary beliefs in education. As binary beliefs are the most significant predictor of attitudes towards both trans and intersex people, interventions need to be implemented to address these beliefs. The present study suggests that when sex and gender are no longer seen as inevitable, mutually exclusive and unchangeable dichotomies, that the conditions for the recognition of trans and intersex students by their teachers are likely to be greatly improved.

In addition, future research could incorporate more applied and context-sensitive aspects. Modifiable factors – such as visibility policies and inclusive materials – may serve as additional predictors of inclusive teaching behaviour and offer practical insights for improving school environments. Exploratory analyses using items on teachers' (planned) behaviour could help identify patterns and inform targeted interventions. Building on this, intervention studies represent a logical next step to test the effectiveness of strategies aimed at fostering inclusive attitudes and practices among teachers.

To conclude, a supportive school environment represents an important protective factor for the mental health of young trans and intersex people (Ioverno, 2023; Lundberg et al., 2021). Following Sperling (2021), schools have a crucial responsibility to rethink sex education and actively engage in comprehensive education and advocacy to end the devaluation of trans and intersex people. The findings also underscore the need for greater focus on intersex topics. Only with consolidated knowledge and awareness will it be possible to end stigma and reflect on more complex issues of intersex people's experiences, such as protecting intersex children from unnecessary medical intervention (Carpenter, 2020; Enzendorfer & Haller, 2020). The present research is the first to demonstrate how a focus on individual trainee teachers' psychological attitudes can play a productive role in making schools more inclusive for trans and intersex students.

Appendix A: Individual characteristics of trainee teachers

Characteristic	Full sample		Transgender condition		Intersex condition	
	%	*N*	%	*n*	%	*n*
Legal gender						
Women	73	232	73	113	74	119
Men	27	84	27	42	26	42
Self-reported sex/gender						
Woman	67	213	70	108	65	105
Man	24	76	24	37	24	39
Nonbinary	3	11	3	4	4	7
Trans man	1	3	2	3	0	0
Trans woman	1	2	1	1	1	1
Intersex	0	1	0	0	1	1
Questioning/not sure	1	4	1	2	1	2
None of them (agender, genderfluid, genderqueer, context-dependent)	2	6	0	0	4	6
Sexual orientation						
Heterosexual	70	221	71	110	69	111
Bisexual	10	31	10	15	10	16
Gay/lesbian	4	14	6	9	3	5
Queer (pansexual, asexual/aromantic, biromantic, demisexual)	10	33	9	14	12	19
Questioning/not sure	4	13	3	5	5	8
Missing values	1	4	1	2	1	2
Residence						
City/suburbs	58	183	55	85	61	98
Rural area	42	133	45	70	39	63
Education (highest degree)						
High school	59	187	54	84	64	103
Vocational education and training	8	25	8	12	8	13
Bachelor's degree	23	74	30	46	17	28
Master's degree	7	21	5	8	8	13
Higher vocational education and training	2	8	3	4	2	4
Individual difference variables						
Interpersonal contact (yes)	40	125	56	87	24	38
Indirect contact (yes)	77	242	92	143	61	99
	M	*SD*	*M*	*SD*	*M*	*SD*
Religiosity (scale from 1 to 7)	2.48	1.76	2.58	1.81	2.39	1.72
Individual difference variables						
Binary beliefs (scale from 1 to 6)	2.61	1.34	2.71	1.45	2.52	1.23
Need for cognitive closure (scale from 1 to 6)	3.24	0.79	3.23	0.79	3.25	0.80

First row full sample ($N=316$), second row transgender condition ($n=155$), and third row intersex condition ($n=161$)

Appendix B: Study definition of transgender and intersex

(1) Transgender refers to a person's gender identity, i.e. how a person views their own gender. We humans are assigned female or male at birth according to our genitals (= vulva/penis). In the case of transgender people, this categorisation is not correct. Some trans people identify as female or male. Trans women were assigned male at birth but identify as women. Trans men were assigned female at birth but identify as men. Other trans people are nonbinary. Nonbinary trans people do not fully identify as either male or female.

(2) Intersex affects a person's innate physical sexual characteristics. These include the vulva, vagina, ovaries, penis, testes, hormones and chromosomes. The sexual characteristics of intersex people are ambiguous and unique. For example, the clitoris may be enlarged, or the penis may be small, and the exit of the urethra may not exit at the tip of the penis. In some intersex people the chromosomes are different from the genitals. This is the case for women with XY chromosomes. There are many more conditions because intersex people are diverse. Intersex people, like all people, have an individual gender identity.

Appendix C: Analysis of 11-item transgender and intersex cognitive attitudes scale

Item No	English translation of German items	M (SD)	r_{it}	Loading
1.	I consider trans/intersex people to be a valuable part of our society.	5.18 (1.29)/5.43 (1.04)	0.71/0.68	0.77/0.77
2.	Society should be better informed about trans/intersex issues.	5.08 (1.44)/5.38 (1.13)	0.78/0.58	0.83/0.68
3.	*I think trans/intersex people who live openly are brave.*	5.10 (1.20)/5.22 (1.06)	0.60/0.24	0.67/0.28
4. r	I find trans/intersex people are unnatural.	5.23 (1.36)/5.66 (0.87)	0.77/0.66	0.82/0.80
5.	I find trans/intersex people are fine.	5.64 (0.99)/5.85 (0.55)	0.81/0.45	0.86/0.58
6. r	I find there is something wrong with a person who is trans/intersex.	5.37 (1.30)/5.61 (0.97)	0.80/0.69	0.85/0.83
7.	*I think trans/intersex people can lead happy lives.*	5.37 (1.03)/5.60 (0.84)	0.39/0.17	0.46/0.25
8.	Trans/Intersex people should be fully accepted.	5.75 (0.76)/5.92 (0.45)	0.84/0.31	0.88/0.41
9. r	I find trans/intersex people unnormal.	5.49 (1.15)/5.7 (0.89)	0.82/0.66	0.85/0.79
10. r	Trans/Intersex people are sick.	5.70 (0.93)/5.88 (0.50)	0.78/0.53	0.84/0.62
11.	*Trans/Intersex people should be treated with respect.*	5.92 (0.45)/5.98 (0.18)	0.47/0.10	0.55/0.14

First coefficients transgender condition/second coefficients intersex condition. Extraction Method: Principal Component Analysis. 1 component extracted. Items 4, 6, 9, and 10 are reverse-coded. The italicised items 3, 7 and 11 were removed from the scale following the evaluation of item total correlations (r_{it}) and item loadings. The scale ranged from 1 to 6

Appendix D: Analysis of 12-item binary beliefs scale

Item No	English translation of German items	M (SD)	r_{it}	Loading
1.	I think it is good that newborn babies are assigned male or female at birth.	4.03 (1.66)	0.71	0.74
2.	A person's gender at birth should remain fixed for a lifetime	1.76 (1.45)	0.79	0.84
3.	A person's genitals determine their sex.	2.54 (1.75)	0.82	0.85
4.	*It makes sense to assign a newborn to either the male or the female gender.*	3.97 (1.73)	0.70	0.74
5.	I think there are two genders, female and male.	2.29 (1.71)	0.83	0.87
6. r	*I find it okay if people do not want to identity as either male or female.*	1.79 (1.49)	0.56	0.62
7.	I think the division between woman and man is natural.	3.52 (1.77)	0.77	0.80
8.	*The body and the gender that one identifies with should match.*	2.08 (1.53)	0.57	0.63
9.	*It is correct to think that there are only two genders.*	2.11 (1.57)	0.84	0.88
10. r	In my opinion, whether a person is a woman or a man depends on whether they feel like a woman or a man.	1.87 (1.38)	0.65	0.71
11. r	I think there are more than just two genders.	2.29 (1.64)	0.81	0.86
12.	*All people should either assign themselves to the male or female gender.*	1.78 (1.37)	0.82	0.86

Extraction Method: Principal Component Analysis. 1 component extracted. Items 6, 9, and 10 are reverse-coded. The italicised items 4, 6, 8, 9, 12 were removed from the scale following the evaluation of item total correlations (rit) and item loadings. The scale ranged from 1 to 6

Appendix E: Transgender and intersex understanding: categorisation of open responses

Category	Response example	% (*n*)
Transgender understanding ($n = 155$)		
Incongruence between sex assignment at birth and gender identity; how a person identifies.	Someone who does not identify with the gender assigned at birth.	83% (129)
Being trans as a choice or changing the gender.	People do not want to assign themselves to one gender and therefore switch between genders.	11% (17)
Confusion with physical sex or sexual orientation.	When a person defines themselves sexually in a different way than their sexual organs indicate.	6% (9)
Intersex understanding ($n = 161$)		
The spectrum of the sexes at the level of sex characteristics.	People that don't comply with the expected female or male norm due to their chromosomes, hormones, genitals.	50% (80)

Category	Response example	% (*n*)
The spectrum of the sexes at the level of sex characteristics. In addition, a distinction is made between the social level (norm), the physical level (hormones, chromosomes, body parts) and the psychological level.	Male includes all people with XY chromosomes […]. Female includes all people with XX chromosomes […]. Intersex is everything in between. […] Intersex is one term for an incredible number of occurrences, feelings, and physical conditions.	4% (7)
Confusion with gender identity (e.g. nonbinarity) or sexual orientation; intersex as a choice; no reference to physical characteristics.	People do not want to assign themselves to one gender and therefore switch between genders.	29% (46)
The gender spectrum but no differentiation at the level of sex characteristics.	People that exist in the spectrum between woman and man.	17% (28)

Appendix F: Frequencies of Questions on training, teaching practices, and institutional policies

	Transgender condition		Intersex condition	
Topic/item	*N*	*Yes* % (*n*)	*N*	*Yes* % (*n*)
Training practices				
(1) Have trans/intersex topics been a part of your education?	155	26% (41)	161	25% (40)
(2) Do you know if the current curriculum allows trans/intersex topics to be addressed in the classroom?	155	38% (59)	161	45% (73)
Teaching practices				
(3) Have you ever been in contact with a trans/intersex child?	155	12% (20)	161	5% (8)
(4) Have you explicitly addressed intersex topics with your pupils?	70	7% (5)	58	6% (4)
(5) Have you explicitly discussed the protection of trans/intersex people from discrimination and violence with your pupils in class?	67	7% (5)	57	3% (2)
(6) Have you made your pupils aware of resources for LGBTIQ + youth?	66	15% (10)	57	23% (13)
(7) Have your pupils attended a workshop?	67	9% (6)	57	12% (7)
(8) Are there teaching materials on trans/intersex topics such as books, brochures, etc. available to you?	155	37% (58)	161	24% (39)
Institutional policies				
(9) Does your school have a policy on how trans/intersex students should be treated?	67	4% (3)	57	9% (5)
(10) Are there teachers at your school who are well versed in trans/intersex topics?	67	28% (19)	57	26% (15)
(11) Is gender diversity visible in your school?	67	6% (4)	57	3% (2)

The total number of participants for a specific question varies due to filter question

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Declarations

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References

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, *50*(2), 179–211. https://doi.org/10.1016/0749-5978(91)90020-T

Anderson, V. N. (2023). What does transgender mean to you? Transgender definitions and attitudes toward trans people. *Psychology of Sexual Orientation and Gender Diversity*, *10*(4), 600–612. https://doi.org/10.1037/sgd0000566

Arcieri, A. A., & DeLucia, L. R. (2022). Development of a scale of prejudice toward bisexual and transgender individuals on the basis of ambiguity intolerance. *Journal of Bisexuality, 22*(1), 1–29. https://doi.org/10.1080/15299716.2022.2044959

Barbir, L. A., Vandevender, A. W., & Cohn, T. J. (2017). Friendship, attitudes, and behavioral intentions of cisgender heterosexuals toward transgender individuals. *Journal of Gay & Lesbian Mental Health, 21*(2), 154–170. https://doi.org/10.1080/19359705.2016.1273157

Bartholomaeus, C., & Riggs, D. W. (2017). Whole-of-school approaches to supporting transgender students, staff, and parents. *International Journal of Transgenderism*, *18*(4), 361–366. https://doi.org/10.1080/15532739.2017.1355648

Billard, T. J. (2018). Attitudes toward transgender men and women: Development and validation of a new measure. *Frontiers in Psychology*. https://doi.org/10.3389/fpsyg.2018.00387

Bishara, A. J., & Hittner, J. B. (2015). Reducing bias and error in the correlation coefficient due to nonnormality. *Educational and Psychological Measurement, 75*(5), 785–804. https://doi.org/10.1177/0013164414557639

Bornstein, K. (1998). *My Gender Workbook: How to Become a Real Man, a Real Woman, the Real You, or Something Else Entirely by Kate Bornstein* (1 edition). Routledge.

Breckler, S. J. (1984). Empirical validation of affect, behavior, and cognition as distinct components of attitude. *Journal of Personality and Social Psychology, 47*(6), 1191.

Brömdal, A., Zavros-Orr, A., lisahunter, Hand, K., & Hart, B. (2021). Towards a whole-school approach for sexuality education in supporting and upholding the rights and health of students with intersex variations. *Sex Education*, *21*(5), 568–583. https://doi.org/10.1080/14681811.2020.1864726

Broussard, K. A., & Warner, R. H. (2019). Gender nonconformity is perceived differently for cisgender and transgender targets. *Sex Roles, 80*(7), 409–428. https://doi.org/10.1007/s11199-018-0947-z

Carpenter, M. (2020). The OHCHR background note on human rights violations against intersex people. *Sexual and Reproductive Health Matters, 28*(1), Article 1731298. https://doi.org/10.1080/26410397.2020.1731298

Carpenter, M., Dalke, K. B., & Earp, B. D. (2023). Endosex. *Journal of Medical Ethics*, *49*(3), 225–226. https://doi.org/10.1136/medethics-2022-108317

Debus, K. (2016). Nicht-diskriminierende Sexualpädagogik. *Handbuch Diskriminierung*. https://www.academia.edu/40169654/Nicht_diskriminierende_Sexualp%C3%A4dagogik

Debus, K., & Laumann, V. (2019). *Glossar Zu begriffen geschlechtlicher und sexueller Vielfalt*. Dissens – Institut für Bildung und Forschung e.V. https://interventionen.dissens.de/fileadmin/Interventionen/Glossar_Interventionen_f%C3%BCr_geschlechtliche_und_sexuelle_Vielfalt.pdf

Deutschschweizer Erziehungsdirektoren-Konferenz (D-EDK) (2016). *Lehrplan 21*. https://v-fe.lehrplan.ch/index.php

Drabish, K., & Theeke, L. A. (2022). Health impact of stigma, discrimination, prejudice, and bias experienced by transgender people: A systematic review of quantitative studies. *Issues in Mental Health Nursing, 43*(2), 111–118. https://doi.org/10.1080/01612840.2021.1961330

Earle, M., Hoffarth, M. R., Prusaczyk, E., MacInnis, C., & Hodson, G. (2021). A multilevel analysis of LGBT (Lesbian, Gay, Bisexual, Transgender) rights support across 77 countries: The role of contact and country laws. *British Journal of Social Psychology*, *60*(3), 851–869. https://doi.org/10.1111/bjso.12436

Edwards, K. (1990). The interplay of affect and cognition in attitude formation and change. *Journal of Personality and Social Psychology*, *59*(2), 202.

Elischberger, H. B., Glazier, J. J., Hill, E. D., & Verduzco-Baker, L. (2016). "Boys don't cry"—or do they? Adult attitudes toward and beliefs about transgender youth. *Sex Roles, 75*(5–6), 197–214. https://doi.org/10.1007/s11199-016-0609-y

Enzendorfer, M., & Haller, P. (2020). Intersex and Education: What Can Schools and Queer School Projects Learn from Current Discourses on Intersex in Austria? In D. A. Francis, J. I. Kjaran, & J. Lehtonen (Hrsg.), *Queer Social Movements and Outreach Work in Schools: A Global Perspective* (S. 261–284). Springer International Publishing. https://doi.org/10.1007/978-3-030-41610-2_12

Field, A. (2018). *Discovering Statistics Using IBM SPSS Statistics*. SAGE Publications.

Forsberg, C., Chiriac, E. H., & Thornberg, R. (2021). Exploring pupils' perspectives on school climate. *Educational Research*, *63*(4), 379–395. https://doi.org/10.1080/00131881.2021.1956988

Gegenfurtner, A. (2021). Pre-service teachers' attitudes toward transgender students: Associations with social contact, religiosity, political preference, sexual orientation, and teacher gender. *International Journal of Educational Research, 110*, Article 101887. https://doi.org/10.1016/j.ijer.2021.101887

Ghattas, D. C. (2015). *Standing up for human rights of intersex people—ILGA-Europe*. https://ilga-europe.org/report/standing-up-for-human-rights-of-intersex-people/

Ghattas, D. C., Kromminga, I. A., Matthigack, E. B., & Mosel, E. T. (2015). *Inter & Sprache—Von „Angeboren bis „Zwitter. Eine Auswahl inter*relevanter Begriffe, mit kritischen Anmerkungen vom TrIQ-Projekt » Antidiskriminierungsarbeit & Empowerment für Inter** (S. 20). https://oiigermany.org/wp-content/uploads/InterUndSprache_A_Z.pdf

Gorrotxategi, M. P., Ozamiz-Etxebarria, N., Jiménez-Etxebarria, E., & Cornelius-White, J. H. D. (2020). Improvement in gender and transgender knowledge in university students through the creative factory methodology. *Frontiers in Psychology*. https://doi.org/10.3389/fpsyg.2020.00367

Graham, S., & Chen, X. (2020). Attribution theories. In S. Graham, & X. Chen (Eds.), *Oxford research encyclopedia of education*. Oxford University Press. https://doi.org/10.1093/acrefore/9780190264093.013.892

Haase, R. K., Brunssen, L., & Kastrup, V. (2025). Transgender, intersex and non-binary students in physical education: A systematic review of teachers' perspectives. *European Physical Education Review*, 1356336X251345402. https://doi.org/10.1177/1356336X251345402

Habarth, J. M. (2015). Development of the heteronormative attitudes and beliefs scale. *Psychology & Sexuality, 6*(2), 166–188. https://doi.org/10.1080/19419899.2013.876444

Hackimer, L., Chen, C.Y.-C., & Verkuilen, J. (2021). Individual factors and cisgender college students' attitudes and behaviors toward transgender individuals. *Journal of Community Psychology, 49*(6), 2023–2039. https://doi.org/10.1002/jcop.22546

Haddock, G., & Zanna, M. P. (1993). *Predicting prejudicial attitudes: The importance of affect, cognition, and the feeling-belief dimension*. ACR North American Advances.

Hart, B., & Shakespeare-Finch, J. (2022). Intersex lived experience: Trauma and posttraumatic growth in narratives. *Psychology & Sexuality*, *13*(4), 912–930. https://doi.org/10.1080/19419899.2021.1938189

Hatch, H. A., Warner, R. H., Broussard, K. A., & Harton, H. C. (2022). Predictors of transgender prejudice: A meta-analysis. *Sex Roles, 87*(11), 583–602. https://doi.org/10.1007/s11199-022-01338-6

Hegarty, P., & Smith, A. (2023). Public understanding of intersex: An update on recent findings. *International Journal of Impotence Research, 35*(1), 72–77. https://doi.org/10.1038/s41443-021-00485-w

Hegarty, P., Donnelly, L., Dutton, P. F., Gillingham, S., Vecchietti, V., & Williams, K. (2021). Understanding of intersex: The meanings of umbrella terms and opinions about medical and social responses among laypeople in the United States and United Kingdom. *Psychology of Sexual Orientation and Gender Diversity, 8*, 25–37. https://doi.org/10.1037/sgd0000413

Hegarty, P., Prandelli, M., Lundberg, T., Liao, L.-M., Creighton, S., & Roen, K. (2021). Drawing the line between essential and nonessential interventions on intersex characteristics with European health care professionals. *Review of General Psychology, 25*(1), 101–114. https://doi.org/10.1177/1089268020963622

Henningham, M., & Jones, T. (2021). Intersex students, sex-based relational learning & isolation. *Sex Education, 21*(5), 600–613. https://doi.org/10.1080/14681811.2021.1873123

Hill, D. B., & Willoughby, B. L. B. (2005). The development and validation of the Genderism and Transphobia Scale. *Sex Roles, 53*(7), 531–544. https://doi.org/10.1007/s11199-005-7140-x

Hofmann, M. (2019). *Akzeptanz sexueller und geschlechtlicher Vielfalt in pädagogischen Settings der Deutschschweiz* [Recherchebericht]. https://www.izfg.unibe.ch/unibe/portal/center_generell/title_fak_ueberg/izfg/content/e7734/e7741/e815327/e909005/Recherchebericht_AkzeptanzsexuellerundgeschlechtlicherVielfalt_2019_ger.pdf

Horton, C. (2023). *Cis-supremacy: Experiences of trans children and families in the UK* [Goldsmiths, University of London]. https://doi.org/10.25602/GOLD.00033797

Ioverno, S. (2023). Inclusive National educational policies as protective factors for LGBTI youth adjustment: An European Cross-National study. *Journal of Adolescent Health*, *72*(6), 845–851. https://doi.org/10.1016/j.jadohealth.2023.01.013

Jäggi, T., Jellestad, L., Corbisiero, S., Schaefer, D. J., Jenewein, J., Schneeberger, A., Kuhn, A., & Garcia Nuñez, D. (2018). Gender minority stress and depressive symptoms in transitioned Swiss transpersons. *BioMed Research International, 2018*, Article e8639263. https://doi.org/10.1155/2018/8639263

Jones, T., Hart, B., Carpenter, M., Ansara, G., Leonard, W., & Lucke, J. (2016). *Intersex: Stories and statistics from Australia*. Open Book. https://doi.org/10.11647/OBP.0089

Jones, A. K., Wehner, C. L., Andrade, I. M., Jones, E. M., Wooten, L. H., & Wilson, L. C. (2024). Minority stress and posttraumatic growth in the transgender and nonbinary community. *Psychology of Sexual Orientation and Gender Diversity, 11*(3), 488–497. https://doi.org/10.1037/sgd0000610

Kampshoff, M., Kleiner, B., & Langer, A. (2023). Trans* und Inter*Geschlechtlichkeit in Erziehung und Bildung – Einleitung. In *Trans- und Intergeschlechtlichkeit in Erziehung und Bildung* (S. 9–22). Verlag Barbara Budrich. https://doi.org/10.25656/01:26181

Kanamori, Y., Cornelius-White, J. H. D., Pegors, T. K., Daniel, T., & Hulgus, J. (2017). Development and validation of the transgender attitudes and beliefs scale. *Archives of Sexual Behavior*, *46*(5), 1503–1515. https://doi.org/10.1007/s10508-016-0840-1

Kappler, C., & Schär, P. (2019). *GeRo21: Reflexion von Geschlecht und Rollen – Umsetzung des Lehrplans 21*. https://phzh.ch/MAP_DataStore/161973/publications/Schlussbericht_2019_Geschlecht_Rollen_LP21.pdf

Kassen, J. E. (2022). Trans and Gender Diverse Youth and Education. In *Oxford Research Encyclopedia of Education*. https://doi.org/10.1093/acrefore/9780190264093.013.1745

Kingsbury, H., & Hegarty, P. (2022). LGB+and heterosexual-identified people produce similar analogies to intersex but have different opinions about its medicalisation. *Psychology & Sexuality, 13*(3), 535–549. https://doi.org/10.1080/19419899.2021.1881595

Klocke, U. (2012). *Akzeptanz sexueller Vielfalt an Berliner Schulen. Eine Befragung zu Verhalten, Einstellungen und Wissen zu LSBT und deren Einflussvariablen*.

Klocke, U. (2016). Einstellungen, Wissen und Verhalten gegenüber Trans*- und geschlechtsnonkonformen Personen. In A. Naß, S. Rentzsch, J. Rödenbeck, & M. Deinbeck (Hrsg.), *Geschlechtliche Vielfalt (er)leben* (S. 41–56). Psychosozial-Verlag. https://doi.org/10.30820/9783837972313-41

Klocke, U., Latz, S., & Scharmacher, J. (2019). Empirische Arbeit: Schule unterm Regenbogen? Einflüsse auf die Berücksichtigung sexueller und geschlechtlicher Vielfalt durch Lehrkräfte. *Psychologie in Erziehung und Unterricht*. https://doi.org/10.2378/peu2019.art12d

Kosciw, J. G., Palmer, N. A., Kull, R. M., & Greytak, E. A. (2013). The effect of negative school climate on academic outcomes for LGBT youth and the role of in-school supports. *Journal of School Violence, 12*(1), 45–63. https://doi.org/10.1080/15388220.2012.732546

Krege, S., Eckoldt, F., Richter-Unruh, A., Köhler, B., Leuschner, I., Mentzel, H. J., Moss, A., Schweizer, K., Stein, R., Werner-Rosen, K., Wieacker, P., Wiesemann, C., Wünsch, L., & Richter-Appelt, H. (2019). Variations of sex development: The first German interdisciplinary consensus paper. *Journal of Pediatric Urology*, *15*(2), 114–123. https://doi.org/10.1016/j.jpurol.2018.10.008

Link, B. G., & Phelan, J. C. (2001). Conceptualizing stigma. *Annual Review of Sociology, 27*(1), 363–385. https://doi.org/10.1146/annurev.soc.27.1.363

lisahunter, Zavros-Orr, A., Brömdal, A., Hand, K., & Hart, B. (2022). Intersex awareness and education: What part can health and physical education bodies of learning and teaching play? *Sport Education and Society*. https://doi.org/10.1080/13573322.2022.2115477

Littman, L. (2021). Individuals treated for gender dysphoria with medical and/or surgical transition who subsequently detransitioned: A survey of 100 detransitioners. *Archives of Sexual Behavior, 50*(8), 3353–3369.

Lundberg, T., Roen, K., Kraft, C., & Hegarty, P. (2021). How young people talk about their variations in sex characteristics: Making the topic of intersex talkable via sex education. *Sex Education*, *21*(5), 552–567. https://doi.org/10.1080/14681811.2021.1911796

Lusk, J. (2017). Japanese millennials and intersex awareness. *Sexuality & Culture*, *21*(2), 613–626. https://doi.org/10.1007/s12119-017-9407-0

Lusk, J., & Johnson, J. (2022). Bibles and bathrooms: Intersex variation awareness among college-aged American Christians. *SAGE Open, 12*(2), Article 21582440221095011. https://doi.org/10.1177/21582440221095011

Marraccini, M. E., Ingram, K. M., Naser, S. C., Grapin, S. L., Toole, E. N., O'Neill, J. C., Chin, A. J., Martinez, R. R., & Griffin, D. (2022). The roles of school in supporting LGBTQ+youth: A systematic review and ecological framework for understanding risk for suicide-related thoughts and behaviors. *Journal of School Psychology, 91*, 27–49. https://doi.org/10.1016/j.jsp.2021.11.006

Mayo, C. (2022). Gender diversities and sex education. *Journal of Philosophy of Education*, *56*(5), 654–662. https://doi.org/10.1111/1467-9752.12686

Mestre, Y. (2022). The human rights situation of intersex people: An analysis of Europe and Latin America. *Social Sciences*. https://doi.org/10.3390/socsci11070317

Morgenroth, T., Sendén, M. G., Lindqvist, A., Renström, E. A., Ryan, M. K., & Morton, T. A. (2021). Defending the sex/gender binary: The role of gender identification and need for closure. *Social Psychological and Personality Science, 12*(5), 731–740. https://doi.org/10.1177/1948550620937188

Murrar, S., Campbell, M. R., & Brauer, M. (2020). Exposure to peers' pro-diversity attitudes increases inclusion and reduces the achievement gap. *Nature Human Behaviour*. https://doi.org/10.1038/s41562-020-0899-5

Nagoshi, J. L., Adams, K. A., Terrell, H. K., Hill, E. D., Brzuzy, S., & Nagoshi, C. T. (2008). Gender differences in correlates of homophobia and transphobia. *Sex Roles, 59*(7), 521. https://doi.org/10.1007/s11199-008-9458-7

Nagoshi, C. T., Raven Cloud, J., Lindley, L. M., Nagoshi, J. L., & Lothamer, L. J. (2019). A test of the three-component model of gender-based prejudices: Homophobia and transphobia are affected by raters' and targets' assigned sex at birth. *Sex Roles, 80*(3), 137–146. https://doi.org/10.1007/s11199-018-0919-3

Norton, A. T., & Herek, G. M. (2013). Heterosexuals' attitudes toward transgender people: Findings from a national probability sample of U.S. adults. *Sex Roles, 68*(11–12), 738–753. https://doi.org/10.1007/s11199-011-0110-6

Pek, J., Wong, O., & Wong, A. C. M. (2018). How to address non-normality: A taxonomy of approaches, reviewed, and illustrated. *Frontiers in Psychology*. https://doi.org/10.3389/fpsyg.2018.02104

Perez-Arche, H., & Miller, D. J. (2021). What predicts attitudes toward transgender and nonbinary people? An exploration of gender, authoritarianism, social dominance, and gender ideology. *Sex Roles, 85*(3–4), 172–189. https://doi.org/10.1007/s11199-020-01212-3

Pöge, K., Dennert, G., Koppe, U., & Güldenring, A. (2020). Die gesundheitliche lage von lesbischen, schwulen, bisexuellen Sowie trans- und intergeschlechtlichen menschen. *Journal of Health Monitoring*. https://doi.org/10.25646/6448

Rauchfleisch, U. (2023). 52 Jahre Erfahrungen mit Transidentität. *Forum der Psychoanalyse, 39*(1), 41–56. https://doi.org/10.1007/s00451-022-00492-7

Reiman, A.-K., Ocasio, T. S., & Mezzapelle, J. L. (2023). How cisgender people define "transgender" is associated with attitudes toward transgender people. *Archives of Sexual Behavior, 52*(3), 991–1007. https://doi.org/10.1007/s10508-022-02454-w

Reis, E. (2022). Prescribing the binary for intersex (and Transgender) children. *Perspectives in Biology and Medicine*, *65*(2), 316–326. https://doi.org/10.1353/pbm.2022.0027

Roen, K. (2004). Intersex embodiment: When health care means maintaining binary sexes. *Sexual Health*, *1*(3), 127–130. https://doi.org/10.1071/SH04007

Rosenwohl-Mack, A., Tamar-Mattis, S., Baratz, A. B., Dalke, K. B., Ittelson, A., Zieselman, K., & Flatt, J. D. (2020). A national study on the physical and mental health of intersex adults in the U.S. *PLoS One, 15*(10), Article e0240088. https://doi.org/10.1371/journal.pone.0240088

Saguy, T., Reifen-Tagar, M., & Joel, D. (2021). The gender-binary cycle: The perpetual relations between a biological-essentialist view of gender, gender ideology, and gender-labelling and sorting. *Philosophical Transactions of the Royal Society B, 376*(1822), Article 20200141. https://doi.org/10.1098/rstb.2020.0141

Schlink, S., & Walther, E. (2007). Kurz und gut: Eine Deutsche Kurzskala Zur erfassung des Bedürfnisses Nach kognitiver geschlossenheit. *Zeitschrift Fur Sozialpsychologie - Z SOZPSYCHOL*, *38*, 153–161. https://doi.org/10.1024/0044-3514.38.3.153

Schmidt, G., & Weiner, B. (1988). An attribution-affect-action theory of behavior: Replications of judgments of help-giving. *Personality and Social Psychology Bulletin, 14*(3), 610–621. https://doi.org/10.1177/0146167288143021

Schweiger, W., Weber, P., Prochazka, F., & Brückner, L. (2019). *Algorithmisch personalisierte Nachrichtenkanäle: Begriffe, Nutzung, wirkung*. Springer Fachmedien Wiesbaden. https://doi.org/10.1007/978-3-658-24062-2

Schweizer, K., Richter-Appelt, H., & Binswanger, R. (Hrsg.) (2012). *Intersexualität kontrovers: Grundlagen, Erfahrungen, Positionen* (Originalausgabe). Psychosozial-Verlag.

Smith, C. A., & Kirby, L. D. (2009). Putting appraisal in context: Toward a relational model of appraisal and emotion. *Cognition and Emotion, 23*(7), 1352–1372.

Steffens, M. C., & Preuß, S. (2020). Measuring Attitudes Toward LGBT Individuals: Theoretical and Practical Considerations. In *Oxford Research Encyclopedia of Politics*. https://doi.org/10.1093/acrefore/9780190228637.013.1176

Stein, K. V., Kleinn, N., Randall, A. K., Lannutti, P. J., Gandhi, Y., Martos, T., Meuwly, N., Rosta-Filep, O., Siegel, M., Ditzen, B., & Fischer, M. S. (2023). Internalisierte Transnegativität, Resilienzfaktoren und psychische Gesundheit in einer Stichprobe geschlechtlicher Minderheiten in Deutschland und der Schweiz. *Zeitschrift für Klinische Psychologie und Psychotherapie, 52*(4), 216–228. https://doi.org/10.1026/1616-3443/a000730

Tajfel, H., & Turner, J. C. (1979). An integrative theory of intergroup conflict. *The social psychology of intergroup relations* (pp. 33–47). Brooks/Cole.

Tee, N., & Hegarty, P. (2006). Predicting opposition to the civil rights of trans persons in the United Kingdom. *Journal of Community & Applied Social Psychology, 16*(1), 70–80. https://doi.org/10.1002/casp.851

Veldhuis, C. B., Cascalheira, C. J., Delucio, K., Budge, S. L., Matsuno, E., Huynh, K., Puckett, J. A., Balsam, K. F., Velez, B. L., & Galupo, M. P. (2024). Sexual orientation and gender diversity research manuscript writing guide. *Psychology of Sexual Orientation and Gender Diversity, 11*(3), 365–396. https://doi.org/10.1037/sgd0000722

Walch, S. E., Ngamake, S. T., Francisco, J., Stitt, R. L., & Shingler, K. A. (2012). The Attitudes Toward Transgendered Individuals Scale: Psychometric Properties. *Archives of Sexual Behavior, 41*(5), 1283–1291. https://doi.org/10.1007/s10508-012-9995-6

Weber, P. (2022). *Homonegatives Verhalten bei Jugendlichen in der Deutschschweiz. Prävalenz und Erklärung anhand eines multifaktoriellen Modells* [Pädagogische Hochschule Freiburg]. https://phfr.bsz-bw.de/frontdoor/index/index/docId/951

Weiner, B. (1985). An attributional theory of achievement motivation and emotion. *Psychological Review*, *92*(4), 548–573. https://doi.org/10.1037/0033-295X.92.4.548

WHO. (2018). *International technical guidance on sexuality education: An evidence-informed approach* (Rev. ed). UNESCO: UN-Women : UNICEF : UNFPA : UNAIDS : WHO.

Worthen, M. G. F. (2013). An argument for separate analyses of attitudes toward Lesbian, Gay, bisexual men, bisexual women, MtF and FtM transgender individuals. *Sex Roles, 68*(11–12), 703–723. https://doi.org/10.1007/s11199-012-0155-1

Worthen, M. G. F. (2016). Hetero-cis–normativity and the gendering of transphobia. *International Journal of Transgenderism, 17*(1), 31–57. https://doi.org/10.1080/15532739.2016.1149538

Worthen, M. G. F. (2020). *Queers, bis, and, straight lies: An intersectional examination ofLGBTQ stigma* (ProQuest (Firme), Hrsg.). https://go.openathens.net/redirector/umoncton.ca?url=https%3A%2F%2Febookcentral.proquest.com%2Flib%2Fumoncton-ebooks%2Fdetail.action%3FdocID%3D6134578

Worthen, M. G. F., Tanzilli, A., Caristo, C., & Lingiardi, V. (2019). Social contact, social distancing, and attitudes toward LGT individuals: A cross-cultural study of college students in the United States, Italy, and Spain. *Journal of Homosexuality, 66*(13), 1882–1908. https://doi.org/10.1080/00918369.2018.1519302

Zanna, M. P., & Rempel, J. K. (2008). *Attitudes: A new look at an old concept.* Psychology Press.